THE LEGAL ISSUES AND CHALLENGES RELATING TO THE CLEAN ENERGY SECTOR IN INDIA

SYNOPSIS SUBMISSION FOR PhD REGISTRATION

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INTRODUCTION

The energy sector plays a key role in the economic development of a country; the worldwide increase in the consumption of energy has led to a scarcity of fossil fuels. This has resulted in the need for exploring other alternatives for energy resources commonly known as renewable resources yielding clean energy. Globally, 19% of the total energy sources are renewable and 14% of this is predominantly derived from biomass sources[1]. Though there is a continuous increase in total installed capacity but the gap between supply and demand is continuously increasing. This is expected to increase to approximately 33% by 2035[2]. India ranked eighth in the world for investments in renewable energy sector. Investment rose 25% to $3.8 billion, dominated by wind power projects ($2.3 billion), followed by $400 million each for solar and biomass power (including waste-to-energy)[3].

In India RES currently contributes 9% of the total power generation of India[4]. RE can influence energy security by mitigating concerns with respect to both availability and distribution of resources, as well as to the variability of energy sources. In India energy contributes more than 25% of total imports[5]. RE can stimulate development, locally economically and socially. In response to the financial and economic crisis many governments have included substantial spending on clean energy technologies in their stimulus packages[6]. RE in poor rural areas

[1] REN21.2010. Renewables 2010, Global Status Report (Paris: REN21 Secretariat).

[2]WORLD ENERGY OUTLOOK 2011 FACTSHEET *How will global energy markets evolve to 2035?*, International Energy Agency, OECD/IEA, (2011). Available at http://www.iea.org/weo/docs/weo2011 /factsheets.pdf, last accessed on 19th April 2012.

[3] REN21. 2011. Renewables 2011 Global Status Report (Paris: REN21 Secretariat).

[4] Buljit Buragohain, Pinakeswar Mahanta, Vijayanand S. Moholkar., *Biomass gasification for decentralized power generation: The Indian perspective*, Renewable and Sustainable Energy Reviews 14: 73–92(2010).

[5] Renewable Energy Sources and Climate Change Mitigation Special Report of the Intergovernmental Panel on Climate Change, Technical Support Unit Working Group III Potsdam Institute for Climate Impact Research (PIK), Cambridge University Press, (2012) available at http://srren.ipcc-wg3.de/report/IPCCSRRENFull Report. pdf.

[6] N. Bauer, A. Bowen, S. Brunner, O. Edenhofer, C. Flachsland, M. Jakob, and N. Stern, Towards a Global Green Recovery. Recommendations for Immediate G20 Action. Report prepared on behalf of the German Foreign Office, Potsdam Institute for Climate Impact Research (PIK), The Grantham Research Institute on Climate Change and Environment (GRI LSE), 49 (2009).

without grid access has shown to bring about potential cost savings compared to fossil fuels (such as diesel generators)[7].

India spends over 45% of their export earnings for importing energy [8]. In analyzing the Indian scenario Shukla et al. (2008) found that the share of RE is higher in cases which included additional sustainability policies (47 versus 34% of primary energy)[9]. Effective policies and major investments in the area would help achieve a high penetration of modern energy[10].

It is noteworthy that India with demonstrated high energy requirements from renewable resources, having a set target of 78.7 GW renewable capacity to be added during the period from 2007–2012 and 20 million rural lighting systems by 2022 doesn't have a Renewable Energy Act drafted till date. Also Protection and Utilization of Public Funded Intellectual Property Bill, 2010 has still not been enacted which may have some influence on the clean energy technology commercialization.

There is a global climate change scenario that needs to be combated. The emission of greenhouse gases results in increases in global warming which can lead to greater variation in temperatures , increased frequency and intensity of extreme weather-related events, and average sea-level rise[11]. Clean energy technologies are a very important part of that as they substitute the use of non renewable fuels which are the main source of GHG's. To fight climate change, there is a dire need to develop a large number and variety of new technologies and proper diffusion of the same. Green technologies include innovations in alternative energy resources, technologies that employ alternative energy sources, technologies which relate to energy storage, recycling and waste technologies, industrial processes, and technologies which can be used for proper utilization and management of greenhouse gases and the proper distribution and management of these technologies[12]. In a country patent protection leads to greater technology transfer but how it effects the countries innovation and development is uncertain[13].

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[7] Christian E. Casillas and Daniel M. Kammen, *Environment and development. The energy-poverty-climate nexus.* Science, 330(6008), pp. 1181-1182(2010).

[8] Garima Jain *Energy security issues at household level in India.* Energy Policy, 38(6), pp. 2835-2845(2010).

[9] P R Shukla, Subash Dhar, Diptiranjan Mahapatra, *Low-carbon society scenarios for India,* Climate Policy, 8, 156 (2008).

[10] Bas van Ruijven, , *Energy and Development – A Modelling Approach*, PhD Thesis, Department of Science, Technology and Society, Utrecht University, Utrecht, The Netherlands (2008)..

[11] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland, 104 pp

[12] David Popp, *Innovation and Climate Policy*. (National Bureau of Economic Research Working Paper Series No.

But as has been stated by Lavanya Rajamani "Thus although it has numerous initiatives on energy efficiency and energy conservation, renewable energy and sustainable transport, it doesnot have any dedicated climate or adaptation laws or policies in the pipeline."

Intellectual property rights, climate change and clean energy trade as is shown is very closely related. Intellectual property rights promote innovation in climate change technologies by providing incentives for investment in research and development. They also contribute towards promoting transfer of climate-friendly technologies when companies export or invest in foreign countries, as they provide legal security to technology owners. However, for technology recipients, intellectual property rights risk increasing the costs of acquisition of climate-friendly technologies and may hamper the rate of their diffusion. It is therefore, imperative to further deepen the dialogue on the role of IPRs in the development and transfer of climate friendly technologies, taking an evidence-based approach[14].

Thus the relationship between Environmental laws, climate change, and IPR is known but what are the factors that can promote adaptation and utilization of these technologies is to be identified and changes in policies and legislations to be suggested on the basis of the findings.

RESEARCH OBJECTIVES

The main objectives of this research are:

1. To critically analyze the significance of clean energy technology in the reduction of green house gas emissions.
2. To examine the international and national policy and laws governing clean energy sector.
3. To critically examine the relationship between environmental protection and granting patent for clean energy technologies.
4. To understand the judicial contribution/activism relating to reduction of green house gases emission by the application of clean energy technology.

RESEARCH HYPOTHESIS

15673, 2010).

[13] Bronwyn H. Hall and Christian Helmers, *The role of patent protection in (clean/green) technology transfer*, SANTA CLARA COMPUTER & HIGH TECH. L.J. (2010).

[14] Samantha Derksen and Ingrid Jegou ICTSD Brief for UNFCCC negotiators, April 2011*The Trade and Climate Change Linkages*, (ICTSD), Available at http://ictsd.org/i/publications/105620/, Last accessed on 18th April 2012.

Hypothesis: Although the emission of Green House Gases are regulated and controlled under the various provisions of Air (prevention and control of pollution) Act 1981, however, the present legal regime regarding the governance of clean energy technologies for the prevention of climate change is inadequate.

RESEARCH QUESTIONS

The key question that this study will ask and attempt to answer is whether the existing legislations and policies regarding climate change and application of clean energy technologies for the prevention of climate change is hampering India's low/no carbon economy targets. It also looks at whether a particular legislation can be suggested to overcome this.

Research Question: How the present legal regime affects the regulation mechanism of clean energy technologies for the prevention of climate change.[15]

RESEARCH METHODOLOGY

Primary Data: The different policies, programs, legislations and acts will be analyzed. The main aim is to determine the loopholes in them which is preventing the utilization, commercialization and transfer of technologies of Indian clean energy inventions. Applications and the granted patents in India related to clean energy inventions will be collected by conducting a keyword search at the Intellectual Property Office website, India and the Weekly Official Publications, of the patent office for the period of 1990 till date. The data will be collected from The IPAIRS database of the Indian Patent Office (http://ipindia.nic.in/ipr/patent/patents.htm). The resultant hits from the searches were often truncated and incomplete. So the database 'India Patents' (Courtesy: Mahuya Roy Choudhury, *Patent Information Centre,* Kolkata) will be used to verify the data for both the patent applications and the granted patents for the years 1990 till date. Key word searches will also conducted using subscribed database QPAT, Questel version 7.0 to verify the data of patent applications from 2005 till date. The keywords used for the search will be; biomass, biofuel,

[15] Following a detailed discussion with my Supervisor, Dr Arup.K.Poddar the research question has been kept unaltered.

biodiesel, bioenergy, biogas, waste, hydro, solar, wind, energy. These will be used either singly (as such or truncated) or in combinations.

Secondary Data: To understand the policy a secondary data search was conducted to identify the relevant Planning Commission Reports, policy documents and legislations. Further secondary data collection on the technical and policy factors that affect the commercialization of clean energy technologies will be derived from MNRE reports other organization policy information and digital library resources such as ProQuest. Data related to patents would be obtained from databases like QPAT, WIPS. Questionnaire survey and personal interviews of the identified officials at the MNRE, CSIR, DST,DBT and of the manufacturers will be conducted.

Measurement Proposed: Qualitative and quantitative analysis of data collected by way of survey conducted through questionnaires and personal interviews and information obtained from reports. Correlation analysis would be performed with respect to a given technological parameter and the rate of utilization.

STRUCTURE OF THE THESIS

The thesis will be tentatively divided into the following chapters.

Chapter 1: Introduction

Chapter 2: Clean energy technology and its significance.

2.1 Background

2.2 Classification of clean energy technology

2.3 Current Scenario

2.4 Effect, Capacity and Deployment of clean energy technology

Chapter 3: International legal regime of clean energy technologies.

3.1 Vienna Convention

3.1.1 Definition of Alternative Technology

3.1.2 Multilateral clean energy technology Sharing Mechanism

3.2 Montreal protocol

3.2.1 International R &D co-operations

3.2.2 Development and transfer of alternative technologies

3.3 WTO and GATT

3.3.1 SCM Agreement

3.4 Kyoto protocol

3.4.1 Clean Development Mechanism

Chapter 4: National policy and laws on governing clean energy technology for the prevention of climate change.

4.1 Legal Framework

4.1.1 Air (Prevention and Control of Pollution) Act

4.1.2 Environment (Protection) Act

4.1.3 Energy Conservation Act

4.2 Policies

4.3 Programs

Chapter 5: Judicial response on the application of clean energy technologies

Chapter 6: Conclusion and Suggestions

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ACTS AND POLICIES

A. INTERNATIONAL
i. Kyoto Protocol
ii. Montreal Protocol
iii. Vienna Convention
iv. WTO
B. NATIONAL
i. Air (Prevention and Control of Pollution) Act
ii. Electricity Act, 2003
iii. Energy Conservation Act, 2001
iv. Environment Protection Act,
v. Integrated energy policy, 2006 .
vi. National Action Plan on Climate Change, 2009.
vii. National Electricity Policy, 2005
viii. National Environment Policy,
ix. National Tariff policy 2006
x. Renewable Power Purchase Guideline of 1993
xi. Rural Electrification Policy (2006).
xii. The Integrated Coal Policy of 1996
xiii. The National Policy on Biofuels, 2009

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